

**Revision of the BRUCHIDÆ of the United States.**

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The family Bruchidæ contains few genera, but very many species distributed in great part in the tropical and warmer temperate regions of the globe. They all undergo their metamorphoses in the seeds of various plants, principally Leguminosæ, and frequently by their numbers cause great injury and loss in those seeds which form part of the food of man. In this list we find peas, beans, lentils, etc. Each species appears to prefer a special plant, or at most, restricts its attacks to the species of one genus.

In our fauna we have three genera ;

Anterior coxæ entirely separated by prosternum.

Hind tibiæ with two slender articulated spurs..... **Spermophagus.**

Hind tibiæ without articulated spurs..... **Caryoborus.**

Anterior coxæ very prominent contiguous at apex.

Hind tibiæ without articulated spurs..... **Bruchus.**

The rather broad intercoxal process of prosternum and the shorter and more oval coxal joints appear to me of sufficient moment to warrant the separations of the species alluded to *Caryoborus arthriticus* as distinct from the other species of *Bruchus*. The elytra are also longer and almost entirely hide the pygidium, which is nearly horizontal, and the antennæ very long and the eyes coarsely granulated, although these two last characters are by no means absent among the true *Bruchus*.

The position the Bruchidæ should occupy in relation to the other tetramerous families appears not to be definitely settled, most authors placing them near the Rhynchophora, while others, among the Curculionidæ themselves. Lacordaire admits that their organization allies them closely to the Chrysomelidæ. This latter place is certainly their position, and if really entitled to rank as a distinct family from the Chrysomelidæ (which is even very doubtful) they should immediately succeed them in a natural arrangement. They are certainly not Rhynchophora.

**SPERMOPHAGUS**, Schon.

*Spermophagus*, Schon., Curculionides, i., p. 102.

Prosternum entirely separating the coxæ. Hind coxæ very broad. metasternal parapleuræ broad parallel. Hind tibiæ with two unequal articulated spurs, the inner one shorter and placed at right angles to

the tibiæ. Hind tibiæ compressed cylindrical, hind femora not toothed. Form oblong oval, feebly convex, elytra nearly covering the pygidium. Eyes coarsely granulated.

**S. robiniaë**, Fab. Syst. El. ii., p. 397; Ent. Syst. i., 2, p. 370; Mantis. i., p. 41; Spec. Ins. i. p. 75. Oval, ferruginous, elytra with small black spots and irregularly clothed with cinereous and ochreous pubescence. Antennæ yellowish testaceous, subserrate. Head ferruginous, punctured. Thorax nearly semicircular in form, anteriorly truncate, base at middle truncate and on each side bisinuate, a fine median line distinct only in basal half; color ferruginous irregularly clouded with piceous, surface with coarse punctures sparsely placed, and finer punctures and densely placed in the intervals; clothed with cinereous and ochreous hairs. Elytra elongate oval, broadest at middle, apices broadly rounded. Surface striate, striæ punctured, intervals feebly convex and densely punctulate; color ferruginous, marked with black spots arranged in five irregular transverse series; clothed with cinereous and ochreous hairs. Body beneath darker than the upper surface and similarly clothed, with sparsely placed coarse punctures, and fine punctures densely placed in the intervals. Legs dark ferruginous. Length .30 inch; 7.5 mm.

Occurs in the Middle, Southern and Western States. This insect in general aspect resembles some of our Cistelidæ, notably *Chromatia*.

Other species of the genus have at times been introduced, but their existence is short, and none appear to have become acclimated, probably from lack of food peculiar to them.

#### **CARYOBORUS**, Schon.

*Caryoborus*, Schon., Curcul. i., p. 92.

Prosternum entirely separating the coxæ. Hind coxæ moderately broad. Hind tibiæ obliquely prolonged and not spinulose, finely grooved on inner edge. Hind femora broad with a tooth and numerous denticulations at tip and with the lower margin crenulate. Head behind the eyes constricted. Lateral margin of thorax straight subacute not deflexed in front, basal margin with a distinctly impressed line close to and parallel with the entire margin. Elytra nearly concealing the pygidium.

The above characters seem worthy of fixing the generic value of *Caryoborus*. The species certainly have a very different aspect from the genuine *Bruchus*.

Two species are known in our fauna.

Humeri muricately punctured; elytra ferruginous pubescence even **Veseyi**. Humeri smooth; elytra brownish, pubescence denser in spots...**arthriticus**.

**C. arthriticus**. Fab. Syst. El. ii., p. 398; *gleditsiæ*, Linn. Syst. Nat. i., ii., p. 605; Oliv. Ent. iv., 79. p. 9, pl. 7, fig. 7. Elliptical, piceous, clothed with cinereous pubescence more densely placed in small spaces. Head piceous, punctured,

sparsely pubescent, front obsoletely carinate. Eyes large coarsely granulated. Antennæ longer than one-half the body, piceous, externally serrate. Thorax transverse, narrower in front, truncate, sides margined, arcuate, hind angles nearly rectangular, base sinuate, median lobe moderate and emarginate opposite the scutellum; surface feebly convex and with very coarse punctures unequally disposed, more dense at the sides in front and at middle, and with minute punctures densely placed in the intervals and clothed with cinereous pubescence. Scutellum sub-reniform, pubescent. Elytra oblong oval, humeri moderately prominent densely and finely punctured, surface striate, striae shallow but with large punctures, intervals feebly convex, densely and finely punctulate, clothed rather sparsely with cinereous pubescence more densely placed in spots. Body beneath darker than above, more finely punctulate and less densely clothed. Legs ferruginous or piceous, hind femora broad, pectinato-dentate near apex, the first tooth being larger, and finely crenulate along the lower margin; hind tibiæ strongly arcuate, obliquely truncate at apex and prolonged on the inner edge. Length .32 inch; 8 mm.

Occurs in States along the Gulf Coast.

**C. Veseyi**, n. sp.—Elliptical, ferruginous or pale brown, evenly clothed with cinereous pubescence.

This species resembles closely the preceding, but differs as follows:

Antennæ slender not subserrate, longer than half the body, pale ferruginous. Thorax less transverse and less coarsely punctured, median basal lobe not emarginate at middle. Scutellum truncate at base, subquadrate. Elytra more elongate more deeply striate, striae coarsely punctured, humeral prominence densely asperato-punctate, elytral intervals feebly convex internally, flat externally, densely but very feebly punctulate; surface evenly clothed with cinereous pubescence not densely placed. Body beneath darker than above and similarly clothed. Legs ferruginous, the anterior two pair somewhat paler. Hind femora similarly armed as in *arthriticus*, but with the anterior tooth larger and the crenulations of the lower edge more distinct. Length .36—.50 inch; 9—12.5 mm.

This is the largest species in our fauna, and by description resembles *nuchorum* and *bactris*, but without the impressed antennæ of those species. Easily known from *arthriticus* by the characters given above, especially by its slender antennæ, rounded median basal lobe and the roughly punctured humeral prominence.

Specimens were collected in the Peninsula of Lower California, by John Xantus de Vesey, to whom it is dedicated.

#### BRUCHIUS, Linn.

*Bruchus*, Linn. Syst. Nat. El. 12, ii., p. 604.

This genus contains in our fauna numerous species, presenting many differences in external appearance and many variations in the structure of one or other portion of their organization. Notwithstanding the changes which many parts of the structures present, none appear

to be of sufficient moment or permanence to afford a basis for the subdivision of the genus into genera of equal value among themselves. These variations, however, afford good bases for the formation of groups, and enable the species to be determined with great ease considering their small size and similarity of vestiture.

The following sketch of the groups into which I propose to distribute our species may appear almost too mathematical to be correct in nature; they will be found, however, to be very persistent in each species, and I have scarcely found in all the specimens examined any variation in the number and position of the denticles of the hind femur:

Thorax with tooth at middle of side.

Hind femur with tooth on outer side only.....Gr. I.  
Thorax not toothed on the sides.

Disc of thorax elevated, with a median groove.

(Hind femur with a strong tooth and three denticles).....Gr. II.

Disc of thorax simply convex, not elevated.

Hind femur with a tooth on both inner and outer margins.....Gr. III.

Hind femur mutic (antennæ pectinate or flabellate ♂).....Gr. IV.

Hind femur with one tooth only on inner margin.....Gr. V.

Hind femur with one tooth and one denticle.....Gr. VI.

Hind femur with one tooth and two denticles.....Gr. VII.

Hind femur with one tooth and three denticles. ....Gr. VIII.

Hind femur with a few small denticles only... ..Gr. IX.

The tooth of the hind femur is situated at the distal end at about one-fourth from the knee, on the lower edge and (except as noted above) on the inner side. Between the tooth and the knee is an emargination of greater or less depth in which the denticles are situated. In Group IV. there is not tooth nor denticle and no emargination of the lower edge of the femur. The femur does not present in any of our species that broad oval form which appears to be accompanied by an extraordinary leaping power. The nearest approach to it is seen in *B. minus*, Say, which resembles in its general aspect a diminutive *Pachymerus*.

#### GROUP I.

Thorax broader than sides moderately arcuate and with a tooth at middle. Antennæ scarcely larger than half the body, similar in the two sexes, gradually thicker externally and subserrate. Posterior femur with a strong tooth near the apex on the outer side. Middle tibiæ ♂ more or less arcuate and with a small tooth on the inner margin near the tip.

This group consists of two species, both introduced from Europe.

Thorax behind lateral tooth sinuate.....**rufimanus**.  
 Thorax behind lateral tooth not sinuate.....**pisi**.

**B. rufimanus**, Sch. Curcul. i., p. 58.—Oblong oval, black, sub-opaque. Head black, densely punctulate, sparsely clothed with ochreous pubescence. Antennæ black, four basal joints rufous. Thorax broader than long, sides moderately rounded in front of tooth, sinuate behind it, tooth in front of middle, acute and moderately prominent; surface opaque densely punctured and with a whitish triangular space in front of scutellum. Scutellum sub-quadrate, emarginate at apex sparsely clothed with cinereous hairs. Elytra slightly longer than broad, feebly convex, sides moderately rounded, surface more shining than the thorax, moderately striate, intervals flat, densely punctulate, and with the basal margin, base of suture and two irregular transverse bands of whitish hairs. Pygidium clothed with cinereous hairs and with two oblong black spots. Body beneath black, densely punctulate and clothed with cinereous hairs. Anterior legs rufous, except their tarsi, tip of tibia and base of femur which are piceous. Middle and hind legs black. Hind femur with a not very distinct tooth near the apex on the outer side. Hind tibia sub-truncate, inner spine not prolonged. Length .14—.16 inch; 3.5—4 mm.

This species was sent me by Mr. C. V. Riley, of St. Louis, as having been reared from pea-pods imported from Switzerland. The European synonymy has been omitted as not pertinent to the present essay. It is closely allied to the following species, but a comparison of the two descriptions will suffice to distinguish them.

**B. pisi**, Linn. Syst. Nat. i., ii., p. 604; Schon. Curcul. i., p. 57.—This species is larger than the preceding and more depressed. The thorax is broader, and broader at base, and the tooth more acute and longer. The three basal joints of the antennæ are rufous. Legs black, anterior tibiæ and tarsi rufous. Hind femur with an acute tooth on the outer margin. The surface of the body is similarly sculptured, but the vestiture is different. The thorax is clothed with ochreous hairs with a whitish space opposite the scutellum. Elytra clothed with yellowish, cinereous and whitish hairs, the latter forming an oblique band behind the middle. Body beneath black, slightly shining and densely punctulate, sparsely clothed with cinereous hairs. Pygidium cinereo-pubescent with two oval blackish spots. Length .20 inch; 5 mm.

Abundant over nearly the entire globe, wherever peas are cultivated, and is at times very destructive to that crop.

## GROUP II.

In this group I have separated one species which does not in its aspect appear to belong to any of these which follow, although from the armature of the hind femur it might be included in Group VIII. The hind femur is broader than is usual in our species and armed with a tooth and three denticles; the tooth is moderate, and the

first two denticles acute and nearly equal in size, the third denticle is broader, shorter and sometimes bifid or emarginate so as to appear as if four denticles were present; the lower edge of the femur is finely crenulate and the apex of the tibia obliquely truncate and the inner angle prolonged. The thorax is campanulate in form, the hind angles decidedly laminiform and the disc rather deeply channelled along the middle, the groove being bounded by an obtusely elevated ridge interrupted at its middle. The body is of robust form, sub-quadrate in outline, elytra feebly convex or sub-depressed. Antennæ similar in the sexes, gradually thicker at tip and slightly more robust in the male.

**B. minus**, Say, Curc. N. A., p. 2; Am. Ent. Edit. Lec. i., p. 260; *cratægi*, Sch. Curc. v., p. 119; *murinus*, Sch. (err. pro *minus*, Say) Curc. v., p. 132; *borealis*, Sch. Curc. v., p. 132.--Brownish, variegated with cinereous, blackish and white pubescence. Head elongate oval, densely punctured, slightly constricted behind the eyes, front carinate, sparsely clothed with cinereous and ochreous hairs. Antennæ pale rufous, basal four joints cylindrical, outer joints flattened and rather suddenly broader. Thorax campanulate, hind angles laminate, disc interruptedly bicostate and on each side near the base a small tubercle; surface sparsely clothed with ochreous pubescence, costæ at summit black or dark brown divided by a small whitish spot. Scutellum quadrate, a median line distinctly impressed, apex emarginate, clothed with brownish hairs. Elytra nearly as broad as long, disc sub-depressed, sides moderately rounded, surface striate, striæ punctured, intervals flat, densely punctulate; color dark brown to rufous, clothed with cinereous, whitish, ochreous and black hairs, the latter arranged as follows: a cordiform spot common to both elytra behind the scutellum and small lines on the intervals irregularly disposed, tipped with white at basal end. Pygidium nearly vertical, moderately convex, clothed with whitish hairs ♀ or with a large, smooth, oval, brown space ♂. Body beneath dark brown, densely punctulate, sparsely clothed with cinereous hairs. Legs pale rufous, hind femur usually darker, and on the under side piceous, hind tibiæ with piceous band at middle, apex spiniform. Length .12 inch; 3 mm.

Abundant from the Middle States southward and westward to Texas and Kansas. The markings of the elytra formed by the distribution of the pubescence of various colors are extremely variable, the cordiform spot near the middle behind the scutellum is very constant and characteristic of the species. There need be no difficulty in distinguishing it from any other species, by the bicostate thorax and strong femora. It has been widely distributed in cabinets under the name *cratægi*, Sch., the name *minus*, Say, having apparently been lost sight of. Through an error in the reading of Say's name, Schonherr proposed *borealis* for what he supposed to be *murinus*, which was pre-

occupied. The name *cratægi*, Sch., is a true synonym, the type was a male, Say's type was the other sex.

## GROUP III.

The species of this group are for the most part of short robust form. The front is usually carinate, the antennæ serrate or even pectinate in the males. The hind femora are not very stout, but have both on the outer and inner margins a tooth, that of the inner side larger. Vestiture and color variable.

Elytra varicolored, pubescence varied.

Median basal thoracic lobe with elevated ivory-like space.....**scutellaris**.

Median basal lobe with whitish hairs only .....**quadrifasciatus**.

Elytra unicolored, black, pubescence dark cinereous.....**sordidus**.

**B. scutellaris**, Fab. Syst. El. ii., p. 399; Ent. Syst. ii., p. 372.—Short, robust, brownish, opaque. Head brown, opaque, densely and coarsely punctured, front subcarinate. Antennæ variable, usually pale rufous, rarely with the outer joints nearly black, as long as head and thorax, male pectinate, female serrate. Thorax trapezoidal, sides nearly straight, base trisinate, median lobe emarginate at middle; color brownish opaque; surface coarsely punctured intervals rugoso-granulate; median line in front and narrow space at sides sparsely clothed with cinereous pubescence, a small whitish spot on each side of the median line near the middle of the thorax, basal lobe white, ivory-like, clothed with whitish pubescence. Scutellum convex, white. Elytra sub-quadrate, feebly convex, wider at base than thorax; surface striate, striæ punctured, intervals flat, scabrous or finely punctulate; color usually brownish or ferruginous with darker spaces at base and humerus, and a darker space at middle of side connected along the margin. Pygidium nearly vertical, clothed with ochreous hairs, with a whitish line along the middle and a reniform brown spot on each side near the apex. Body beneath brownish, densely punctulate, sparsely clothed with whitish hairs; abdomen paler, with a band of white hairs at the sides. Legs, anterior and middle pairs, pale rufous, hind legs dark rufous or brownish. Hind femora armed near the tip with an acute tooth on the outer and inner side. Length .12—.16 in; 3—4 mm.

This species is variable in its color and elytral vestiture. The above description applies to the forms most abundantly found. Specimens from the Southern States are much darker in color and exhibit the elytral vestiture more distinctly. Between the basal and lateral dark spaces the pubescence is pale ochreous, and behind the lateral space cinereous. In front of the lateral spaces is a short band composed of three spots and behind it an irregular band crossing the elytra. The third interval has also a short white line. The pubescence of the pygidium at times becomes uniformly cinereous.

This species has been confounded with *quadrifasciatus*, but differs

by its shorter and more robust form and system of coloration. The differences will be made known under that species.

This species appears to have been widely distributed over the entire globe and has several times been described under other names. The foreign synonymy has been omitted as not pertinent to the present essay.

**B. quadrimaculatus**, Fab. Syst. El. ii., p. 398; Ent. Syst. i., ii., p. 371; Oliv. Ent. iv., p. 49, pl. 3, fig. 24.—Elongate oval, moderately shining. Beneath equally clothed with whitish pubescence. Elytra ferruginous or pale brown with large lateral spot and apex broadly black. Head dark brown or black, densely punctured, front sub-carinate. Antennæ as long as head and thorax, serrate in both sexes, four basal joints pale rufous, outer joints dark and nearly black. Thorax trapezoidal, broader at base than long, sides distinctly arcuate, base trisinate, basal lobe emarginate and clothed with whitish hairs; color variable from ferruginous to black, coarsely punctured, sub-granulate and feebly shining, sparsely clothed with cinereous hair. Scutellum with median impressed line and clothed with whitish hair. Elytra broader at base than thorax and longer than wide, sides feebly arcuate, humeri moderately prominent; striate, striæ punctured, intervals flat densely punctulate; color ferruginous with large lateral spot and apex black, clothed with whitish and cinereous pubescence. Pygidium nearly black with median line of whitish pubescence. Body beneath piceous densely punctulate and sparsely but evenly clothed with cinereous hairs; abdomen pale brown. Anterior and middle legs pale rufous, hind legs pale brown. Hind femora armed with an acute tooth on the inner side and a broad triangular tooth on the outer side. Length .12—.18 inch; 3—4.5 mm.

The great majority of specimens are nearly black with the elytra pale brown with the four spots as indicated. An occasional specimen is seen of rufous color as figured by Olivier, which has the elytra in great part deprived of pubescence. The pubescence is cinereous but with the third interval with a short white line, at each end of which is a brownish spot; between the external and apical spots an irregular whitish band. The lateral spot has at times a patch of pubescence at its centre so that the color of the spot is concealed and it then appears as a sinuous band.

*B. quadrimaculatus* is closely allied to *scutellaris*, but differs in many points. The thorax is broader, the sides distinctly arcuate, the basal lobe not eburneous. The scutellum is flat and with median line. The elytra are longer, and differently spotted and the abdomen is evenly clothed with cinereous pubescence. This species is also larger and much less robust.

Occurs in the West India Islands and the Southern States.



**B. sordidus**, n. sp.—Short, robust, black, opaque, sparsely clothed with dark cinereous or ochreous pubescence. Scutellum white. Pygidium and undersurface clothed evenly with whitish pubescence. Head black, scarcely pubescent, densely punctured, front not carinate. Antennæ pale rufous, outer joints slightly darker, feebly sub-serrate. Thorax one and a half times broader at base than long, sides strongly arcuate, base trisinate, median lobe moderate, feebly emarginate, surface moderately convex, densely and evenly punctulate, punctures much coarser near the base, clothed with ochreous and cinereous hairs, evenly intermixed. Scutellum sub-quadrate, emarginate at tip and not impressed along the middle, clothed with whitish pubescence. Elytra rather suddenly broader than the thorax, as wide as long, sides arcuate, surface moderately convex, humeral protuberance feeble, striate, striæ punctured, intervals flat, densely punctulate, clothed with dark ochreous and cinereous pubescence evenly intermixed. Pygidium nearly vertical, broader than long, moderately convex near apex, clothed with whitish pubescence. Body beneath black, densely punctulate, sides of metasternum coarsely punctured, evenly clothed with cinereous pubescence. Legs pale rufous, hind femora piceous at base and armed near the tip with a slender, long, sub-arcuate tooth on the inner side and a short, broad tooth acute at tip on the outer side. Length .10—.12 inch ; 2.5—3 mm.

The strongly rounded sides of the thorax give this species a very different appearance from the other two of this group. Its uniformly black color and cinereo-ochreous vestiture will still further help to distinguish it. The outer tooth of the hind femur is much less marked, but at the same time more acute at tip. It bears a greater resemblance to the species of Group V. than to the present group, but the distinct external tooth at once fixes its position.

The specimen before me is a female and from the form of its antennæ would infer that those of the male were at most sub-serrate and not pectinate.

Collected in the Peninsula of Lower California.

Several other species which I have not certainly identified belong to this group.

**B. biguttellus**, Sch. Curc. i., p. 42; *biguttatus* || Fab. Syst. El. ii., p. 402.—Thorace nigro, lineolis duabus baseos scutelloque albis, elytris basi rufis, antennis flabellatis.

This species appears to be a dark colored male of *scutellaris*. The flabellate antennæ would seem to indicate that it must be referred to this group or the next in which such a character occurs. Schonherr places it among the species with dentate femora, although he did not know the species in nature.

“Patria, Carolina.”

**B. sinuatus**, Sch. Curc. v., p. 8.—“Ovatus, niger, parce griseo-pubescent; elytris striatis, disco rufo-ferrugineo, limbo sinuatum nigro, pygidio ferrugineo, fusco maculato, antennarum base pedibusque ferrugineis, femoribus posticis, nigro plagiatis, dente validiore armatis. Scutellum apice subrotundatum, nigrum, tenuiter griseo-pubescent. Elytra-disco rufo-ferruginea, regione scutelli, margine baseos, plaga laterale sinuata, ab humeris pone medium extensa, apice late suturaque anguste nigris, in disco præterea lineis duabus discretis, ejusdem coloris, notata. Pedes quatuor anteriores tenuiores; toti ferruginei, postici validiores, femoribus ferrugineis, nigro plagiatis, subtus apice spina acuta et juxta illam externe dente validiore armatis, tibiis tarsisque totis ferrugineis. Patria Carolina.”

This appears to be merely a variety of *4-maculatus*, of the darker colored variety in which the lateral black space has a central spot of cinereous pubescence so that the spot assumes the form of a sinuous band. The above description is an abbreviation which agrees fully with the dark variety of *4-maculatus* already cited.

**B. maculatus**, Fab. Syst. El. ii., p. 491; Ent. Syst. i., ii., p. 373; Oliv. Enc. Meth. v., p. 201; Linn. Syst. Nat. Gmel. i., ii., p. 1737.—“Elytris punctatis, testaceis, nigro-maculatis, pedice griseis, punctis binis nigris. Patria America.”

This species is said to be synonymous with *quadrinaculatus* by Schonherr, Curc. v., p. 2, but the description is so very short and uncharacteristic as to be absolutely valueless, although Schonherr, who appears to have seen the species, appears to be certain of the synonymy.

**B. ambiguus**, Sch. Curc. v., p. 11.—“Oblongo ovatus, sub-depressus, niger, inaequaliter cinereo tomentosus, antennarum basi pedibusque rufo-testaceis; thorace confertim punctato, nigro, nitido, in medio baseos lineolis duabus angulatis, albo-tomentosis notato; elytris punctato-striatis ferrugineis, lateribus sinuatum apiceque nigris. Patria Louisiana, Americes.”

Similar to *B. quadrinaculatus*, but more than twice the size, thorax more evidently punctured and more shining, etc. Head moderately large, convex, densely punctulate, black, sparsely clothed with whitish hairs, front finely carinate. Eyes lunate, black, moderately prominent; rostrum very short. Antennæ moderate, serrate, black, the basal three or four joints rufo-testaceous. Thorax slightly shorter than broad, apex half as wide as base, truncate; sides oblique nearly straight, base trisinate, median lobe not deeply but acutely incised; above moderately convex, sub-pulvinate, black, moderately shining, at sides cinereo-tomentose; at middle of base two whitish lines not elevated, contiguous at their apices are seen, either straight or slightly angulate toward the sides. Scutellum ovate, black. Each elytral base rounded, scarcely wider than base of thorax, humeri rounded, elevated in moderately long callus; sides not rounded at apex, each

obtusely rounded, twice as long as thorax, above almost flat, distinctly striate, striæ sub-remotely punctured; intervals flat, very finely transversely strigose; color ferruginous slightly shining, with numerous short whitish lines in the intervals and at the sides sinuately and at apex transversely black. Pygidium semi-orbulate, either entirely cinereo-tomentose or with a median line of same color. Body beneath obsolete punctulate, black, finely cinereo-tomentose. Middle and anterior legs more slender, rufo-testaceous; posterior legs robust, femora thick, often black, cinereo-tomentose, beneath near apex armed with a moderate tooth, tibiæ and tarsi testaceous.

Varies with the elytra entirely black.

The above description, which is a translation of that of Schonherr, indicates a species totally differing from any known to me. It cannot be definitely stated that it is a member of the present group, although associated, by Schonherr, with other species with the armature of hind femur peculiar here; in fact in but one instance has Schonherr stated the existence of an external as well as internal tooth. The matter is left for the discoveries of future collectors who will be rewarded with one of the largest species in our fauna.

#### GROUP IV.

This group contains those species in which the femur becomes quite slender and has neither tooth nor denticle. All the species in our fauna are short, sub-quadrate, and of robust form. Thorax short, always twice as broad at base as long. In the males the antennæ are pectinate or even flabellate, the eyes large and nearly contiguous on the middle line of the front.

Three species are known.

- Elytra black, with large red space on each.....**discoideus.**  
 Elytra rufous, with coarse perforations.....**coryphæ.**  
 Elytra dark rufous, humeri and apex with small black spot, surface variegated with whitish pubescence.....**impiger.**

**B. discoideus.** Say, Journ. Acad., Ser. 1, vol. iii., p. 307.—Short, robust, black, sub opaque, elytra with large red spot on each near the side. Pygidium nearly vertical, desely clothed with whitish pubescence and with four small black spots. Body beneath black, clothed with whitish pubescence. Head black, sub-opaque, densely punctured, front carinate. Antennæ black, slightly longer than head and thorax, serrate ♀ or flabellate ♂ from the fourth joint, the branches very long. Thorax trapezoidal, nearly twice as wide at base as long, anteriorly truncate, base trisinate, median lobe prominent, emarginate at tip; sides slightly arcuate; median line finely impressed, on each side of which near the base a broad tubercle, surface coarsely punctured, sub-opaque sparsely clothed with whitish hairs. Scutellum black, cinereo-pubescent, con-

vex and punctured. Elytra scarcely wider at base than thorax, sub-quadrate, sides feebly arcuate and narrowing to apex, sutural region depressed, humeri moderately prominent, surface deeply striate, striæ coarsely punctured, intervals flat, punctato-scabrous, sparsely clothed with very short whitish pubescence; color black, opaque, with large rufous spot touching the lateral margin only. Pygidium elongate oval, densely clothed with white pubescence and with two small round black spots at centre and one triangular on each side near the apex. Body beneath black, densely clothed with whitish pubescence. Legs black, sparsely whitish pubescent. Length .12—.18 inch; 3—4.5 mm.

A very distinct species, and one which cannot be confounded with any other in our fauna. The eyes are unusually large (especially in the male), very convex and nearly contiguous at the front, and behind them the head is apparently constricted. The outer joints of the antennæ are gradually shorter and furnished on the anterior side with long branches from the fourth joint. The process of the fourth joint, although stouter, is scarcely half as long as that of the sixth, the fifth being intermediate in size, the processes from 7—11 are nearly as long as the entire antenna itself. The very short pubescence of the elytra gives them a pruinose appearance. The male has the pygidium nearly vertical, in the other sex slightly oblique.

Occurs in Kansas and Colorado.

**B. coryphæ**, Oliv. Ent. iv., No. 79, p. 16, pl. 2, fig. 18, a, b, c; Fab. Syst. El. ii., p. 402.—Form short, robust; color rufous, moderately shining, head and antennæ black, beneath clothed with dense white pubescence; legs rufous, hind femora mutic. Head black, sub-opaque, front sub-carinate, eyes large moderately prominent. Antennæ ♂ pectinate from the fifth joint, fourth joint triangular, color black, longer than head and thorax. Thorax rufous moderately shining, one and a half times as wide at base as long, apex truncate, narrowly margined with black, base trisinate, median lobe emarginate at middle, sides very feebly arcuate; surface densely and coarsely punctured, median line at middle feebly impressed, surface very sparsely clothed with whitish pubescence of a deciduous nature. Elytra sub-quadrate, as broad conjointly as long, gradually wider at base than thorax, deeply and broadly striate, striæ with very large, distinct, deep punctures, intervals narrow, convex and smooth; sutural region depressed, suture very narrowly margined with black; surface very sparsely pubescent with whitish hairs and a small round spot at the middle of suture common to both elytra clothed with whitish hairs. Scutellum small, rounded, clothed with whitish pubescence. Pygidium elongate oval vertical, densely clothed with whitish pubescence, a distinctly impressed puncture on each side of middle and two small black spots at sides near the apex. Body beneath rufous, coarsely punctured and densely clothed with whitish pubescence; hind coxæ black; abdomen rufous, finely punctulate, densely clothed with whitish pubescence. Legs rufous, tarsi black. Length .16 inch; 4 mm.

Closely resembles in form the preceding species, but abundantly

distinct in many points. The elytral punctures are larger and deeper than in any other species in our fauna. The pubescence is of such a nature as to be easily removed from the upper surface. The thorax shows but slight traces of pubescence. The punctures of the thorax, although coarse and dense are yet very distinct and the surface less rugous than in many species with much less dense punctulation. The figure given by Olivier is unusually characteristic. Schonherr appears to have lost sight of Olivier's description and figure and credits Fabricius with the species, although several years later in publication.

One male specimen in the cabinet of Mr. H. Ulke, from Texas.

**B. impiger**, n. sp.—Robust, oblong-quadrate, black, sparsely cinereo-pubescent, abdomen piceous, legs rufous, hind femora piceous mutic. Elytra dark rufous, humeri and apices darker, sparsely cinereo-pubescent, forming designs. Head black, densely punctulate, front feebly sub-carinate. Antennæ as long as half the body, sub-serrate ♀, outer joints almost black, four basal joints dark rufous or piceous. Thorax piceous, or rufo-piceous, twice as broad at base as long, sides slightly arcuate, base trisinuate, median lobe feebly emarginate; surface moderately convex, densely punctured, opaque, very sparsely cinereo-pubescent, at anterior margin and two spots on each side of middle slightly more dense and evident. Scutellum sub-quadrate, black, sparsely cinereotomentose. Elytra slightly longer than wide, at base slightly wider than thorax, sides very feebly arcuate, surface moderately convex, suture not depressed, striate, striæ punctured, intervals flat, densely punctulato-rugose; color dark rufous or pale brown, humeri and outer apical angle piceous or black; sparsely clothed with cinereous pubescence arranged as follows:—A transverse sinuous band composed of short lines on the intervals, beginning on each side behind the humeral dark spot, at apical three-fourths an arcuate band on each elytra composed of short lines on the alternate intervals beginning behind the sinuous band on each side and arching to the apex of suture. Body beneath black, punctulate densely cinereo-pubescent, abdomen piceous similarly invested. Legs rufous, hind femora piceous, mutic. Length .08—.12 inch; 2—3 mm.

Smaller than the preceding two species and without the sutural depression of the elytra.

Collected in Owen's Valley, California.

#### GROUP V.

Hind femur armed on the inner margin near the apex with an acute tooth without denticles. The species of this group are less robust than those of the three preceding groups, and are more robust than any which follow. Their form is oblong oval, the sides of the thorax being arcuate and the elytra at base scarcely broader and following nearly the curve of the sides of the thorax. The humeri are scarcely prominent.

Our species are more numerous than in any of the preceding groups and may be distinguished as follows :

Thorax densely clothed with white pubescence ; surface color concealed.

Elytra black, an elongate triangular sutural space clothed with white. **Ulkei**.  
Thorax sparsely or not clothed with cinereous pubescence ; surface color always visible and black.

Elytra black with rufous spots on spaces.

Suture depressed. Rufous spot median touching the lateral margin.

**bivulneratus.**

Disc of elytra flat ; suture not depressed.

Thorax with median line distinctly impressed at base ; elytra more rufous than black.

Hind legs black.....**limbatus.**

Hind legs pale rufous.....**discolor.**

Thorax with median line ; elytra more black than rufous.

Elytra with rufous spot near outer apical margin.....**eruentatus.**

Elytra black.

Hind femur and tibia bicolored.....**nigrinus.**

Hind legs entirely black.....**pruininus.**

**B. Ulkei**, n. sp.—Black, densely clothed with white pubescence, elytra with broad lateral space clothed with black pubescence. Head broadly oval, black, opaque, densely punctulate and clothed with whitish pubescence, epistoma black. Antennæ half the length of the body, pale rufous, serrate. Thorax one-half wider at base than long, sides moderately arcuate and rapidly narrowed in front, apex truncate, angles broadly rounded, base with moderate median lobe rounded at tip, on each side feebly sinuate ; surface coarsely punctured and densely clothed with silvery white hairs. Scutellum sub-quadrangle, bifid at tip, clothed with white pubescence. Elytra scarcely wider at base than thorax, sides moderately arcuate and gradually narrowed to tips which in each are broadly rounded, surface striate, striæ distantly punctured, intervals flat very densely punctulate and densely clothed at the sides with very black pubescence, and with a triangle of silvery white hairs common to both elytra. Body beneath black, densely clothed with silvery white hairs. Anterior and middle legs rufous, hind legs black. Pygidium broadly oval, densely clothed with white and on each side a round black spot. Terminal abdominal segment with a black spot on each side of middle. Length .20 inch ; 5 mm.

One of the most distinct species in our fauna, and at the same time with an unique style of vestiture. The lateral black space begins at the base of the sixth stria and extends obliquely to the tip of the suture, a narrow epiplural space is, however, white ; the white space is thus confined to an elongate triangle common to both elytra.

Dedicated with great pleasure to Mr. H. Ulke, who has at all times placed at my disposal any species for study contained in his cabinet.

Collected in Arizona.

**B. bivulneratus**, n. sp.—Black, feebly shining, elytra black, with large red spot at middle of each, attaining the margin but not the suture. Body short, robust. Head elongate oval, black, feebly shining, densely punctured. Antennæ as long as head and thorax black, three basal joints piceo-rufous. Thorax black, shining, one-half broader at base than long, sides feebly arcuate and gradually narrowing at apex, apex truncate, base at middle lobed, lobe sub-truncate at tip on each side feebly sinuate, surface densely punctured punctures moderately coarse, equal and evenly disposed. Scutellum broader than long, black, clothed with whitish pubescence. Elytra as broad as long, suture depressed, at base not wider than thorax, sides strongly arcuate, surface deeply striate, intervals flat, densely punctulato-rugose. Pygidium broadly oval, sub-opaque, densely punctulato-rugose. Body beneath black, coarsely punctured, abdomen densely punctulate. Legs black, anterior and middle tibiæ occasionally piceo-rufous. Length .12 inch; 3 mm.

The entire surface of this species is very sparsely clothed with a short scarcely evident pubescence, dark brown on the black portions of the body and rufous on the elytral spot. The elytral red spot is large occupying nearly one-half the surface of each elytron, nearer the apex than the base, attaining the lateral margin, but separated from the suture by one or sometimes two intervals. By its form, coloration and depressed suture it resembles *discoideus* of the preceding group, the hind femur is distinctly unidentate.

Occurs in the Southern and Western States.

**B. eruentatus**, n. sp.—Broadly oval, black, moderately shining, elytra with red spot of variable size near apex, surface sparsely clothed with cinereous pubescence. Head black, moderately shining, elongate oval, punctured. Antennæ slightly longer than head and thorax, black, four basal joints rufous, sub-serrate. Thorax one-third broader at base than long, moderately convex, apex truncate, base lobed at middle, lobe truncate, on each side feebly sinuate, sides broadly rounded at anterior third, straight and strongly divergent behind; color black, moderately shining, densely and finely punctulate with coarse punctures at base and sides, sparsely cinereo-pubescent, median line at base indicated by very shallow, scarcely evident fovea. Scutellum transversely sub-quadrangle, impressed, emarginate at tip and clothed with cinereous hairs. Elytra broader at base than thorax, humeri moderately prominent, sides broadly rounded, apices rotundato-truncate; surface striate, striæ distantly punctured, intervals flat, densely punctulate, sparsely clothed with very short scarcely evident cinereous pubescence; color black, moderately shining, with red spot of variable size near the apex, sometimes small rounded, unusually large pyriform involving the greater portion of each elytron. Pygidium black, moderately convex, densely punctulate, sparsely pubescent. Beneath black, densely punctulate, sparsely cinereo-pubescent. Anterior and middle legs rufous, hind legs black. Length .12 inch; 3 mm.

This species is of variable appearance from the size of the rufous spot of the elytra, the position of which is, however, subapical usually of moderate size rarely punctiform and occasionally very large. In the

majority of species before me the legs are as described; one specimen before me has the hind legs also rufous. It resembles the figure of *B. biguttatus*, Ol., and also *B. bipustulatus*, Fab., by description, but distinct from both by many characters. In our own fauna it resembles *B. bivulneratus*, H., but differs by the disc of the elytra flat, the striæ less deep and the position of the spot.

Widely distributed in its range, but not common, in Georgia, Illinois, Texas and Dacota.

**B. limbatus**, n. sp.—Broadly oval, robust, black, sub-opaque, clothed with cinereous pubescence, elytra black with elongate reniform rufous space, with the emargination external, on each. Head elongate oval, black, sub-opaque, densely punctulate, sparsely cinereo-pubescent, front sub-carinate. Antennæ longer than head and thorax, black, four basal joints rufous. Thorax twice as wide at base as long, apex truncate, base moderately lobed at middle, on each side broadly rounded, sides arcuate and gradually narrowing to apex; surface densely punctured with moderately large punctures evenly disposed, median line at base distinctly impressed and smooth, clothed with cinereous pubescence, but not densely. Scutellum sub-quadrate, emarginate at tip, clothed with whitish pubescence. Elytra as broad as long, disc sub-depressed, striate, striæ distantly punctured, intervals flat, densely punctulate, humeri moderately prominent, sides arcuate, apices rounded, surface clothed sparsely with cinereous pubescence, color black, with long reniform rufous space attaining the sides near apex and also the apex. Pygidium black, sparsely but coarsely punctured, clothed with whitish hairs. Beneath black, cinereo-pubescent. Antennæ and middle legs rufous, hind legs black. Length .12 inch; 3 mm.

The pubescence gives this species a pruinose aspect. The elytra are more rufous than black, the latter color forming a narrow space along the suture and base, extending down on the sides to near the middle and terminating in a dilated end; the rufous space is, therefore reniform in shape.

Occurs in the Peninsula of Lower California and also in Sonora, Mexico.

**B. discolor**, n. sp.—Form moderately robust, black, clothed with moderately long, cinereo-pubescence, elytra ferruginous with dark spaces indistinctly limited at sides, base and base of suture. Head black opaque, densely punctulate, sparsely pubescent, occiput with finely impressed median line. Antennæ rufous, slightly longer than head and thorax. Thorax scarcely twice as wide at base as long, sides straight, gradually convergent and rounded at the anterior angles, base with moderate truncate lobe, on each side slightly sinuate, surface moderately convex, coarsely punctured, shining, median line at base impressed and shining, clothed with yellowish cinereous pubescence with a paler line on the median line and toward the sides. Scutellum sub-quadrate, broader than long, emarginate at tip, clothed with white pubescence. Elytra



not broader at base than thorax, humeri not prominent, sides in front slightly divergent, then broadly rounded, surface finely striate, striæ punctured, intervals flat, densely punctulate, clothed with yellowish cinereous pubescence; color ferruginous, gradually becoming piceous at the sides in front, at base and at base of suture. Pygidium broadly oval, densely punctured, a shallow fovea on each side, surface cinereo-pubescent, median line paler. Beneath black, finely punctulate and cinereo-pubescent. Legs pale rufous. Length .10 inch; 2.5 mm.

The pubescence of this species is rather longer than in any of the group. The elytra gradually pass from the ferruginous color to piceous, the latter color forming a narrow space along the base, down the sides to middle and to the same extent along the suture.

One specimen from Texas in the cabinet of Mr. Ulke.

**B. nigrinus**, n. sp.—Broadly oval, robust, black, feebly shining, very sparsely clothed with brownish pubescence. Head black, punctured, front obsoletely carinate. Antennæ as long as head and thorax, black, four basal joints rufous. Thorax nearly twice as wide at base as long, base lobed at middle, on each side sinuate, sides rounded in front, straight and divergent to base; surface black, feebly shining, densely punctured, very sparsely clothed with short brownish hair, and a fine cinereous line at middle and a small spot on each side at the basal margin. Scutellum emarginate at tip, clothed with whitish pubescence. Elytra as broad as long, disc sub-depressed, at base not wider than the thorax, sides strongly arcuate, surface striate, striæ distantly punctured, intervals flat, densely punctulato-rugose, color black, moderately shining. Pygidium oval, black, coarsely punctato-rugose, sparsely cinereo-pubescent. Body beneath black, more shining than above, densely punctulate, sparsely pubescent. Femora and tibiæ at basal half black, apex rufous. Tarsi rufous. Length .12—.14 inch; 3—3.5 mm.

Resembles in form *B. cruentatus*, but differs by the absence of elytral red spot, more opaque and rugose surface and more coarsely punctured thorax.

Three specimens from Middle States. Cabinet Leconte.

**B. pruininus**, n. sp.—Robust; oval, black, moderately shining, sparsely clothed with whitish pubescence, giving the species a pruinose aspect. Head black, densely punctulate, very sparsely pubescent, front sub-carinate. Antennæ as long as head and thorax, black, four basal joints rufous. Thorax nearly twice as wide at base as long, base at middle lobed, on each side sinuate, sides arcuate and gradually narrowed to apex; surface moderately convex, densely and rather finely punctate, black, moderately shining, sparsely clothed with whitish pubescence. Scutellum small, rounded, densely clothed with whitish pubescence. Elytra longer than broad, at base slightly broader than thorax, humeri not prominent, sides feebly arcuate; surface very finely striate, striæ punctured, intervals flat, moderately shining, densely but very finely punctulate. Pygidium oblique coarsely and sparsely punctured with fine punctures densely intermixed, clothed sparsely with cinereous pubescence. Body beneath black, densely and finely punctulate, sparsely clothed with

whitish pubescence. Anterior and middle legs rufous, hind legs black, tarsi black. Length .12—.14 inch; 3—3.5 mm.

This species is very distinct from any in the group. The vestiture gives it an unmistakable appearance.

This species is found on the Ironwood tree of Arizona.

#### GROUP VI.

This group contains a small number of small species differing from the preceding group in the possession of a small denticle in addition to the main tooth. The tooth is small and the emargination of the femur within which it is situated, is slight, the denticle scarcely evident or even obsolete. The group can hardly be considered of equal value to those which precede, although the species cannot be strictly referred to those which follow. The ninth group is also of doubtful value as the minute denticulation does not appear to be equal among the individuals of the species and any decided enlargement of a denticle would refer the species to some other group. Among our species we always find the primary tooth quite distinct. The denticle that is sometimes present and occasionally obsolete might seem to be too slight a character for the separation of these species from the preceding group. In the group which precedes the tooth is always of moderate size, acute and with the emargination of the femur very decidedly marked. Our species are three, all small, elongate oval, of rather slender form, more attenuate in front and with the pygidium decidedly oblique and never vertical as is seen in most of the species of all the preceding groups. They may be distinguished in the following manner :

Color testaceous; clothed with pale yellowish-white pubescence.

#### **desertorum.**

Color black, more or less concealed by pubescence.

Yellowish pubescence densely placed, concealing surface color...**aureolus.**

Cinereous or whitish pubescence sparsely placed, surface color evident.

#### **pauperculus.**

**B. desertorum**, Lec., Proc. Acad., 1858, p. 78.—Oblong oval, pale testaceous, clothed with whitish pubescence. Head testaceous, front and occiput dark brown, densely punctulate and clothed with whitish pubescence. Antennæ pale testaceous, scarcely extended to base of thorax, Thorax trapezoidal not wider at base than long, sides nearly straight and gradually narrowed to apex, base feebly lobed at middle, lobe truncate, on each side straight; surface convex, coarsely punctured and rugulose, dotted with whitish pubescence; color variable from pale testaceous to piceo-testaceous. Scutellum twice as long as wide, clothed with white pubescence. Elytra above flat or very feebly convex, not wider at base than thorax, then gradually wider to a point in front

of middle and moderately arcuate to apex, finely striate, striæ punctured, intervals flat, finely transversely strigose and punctulate, clothed with whitish pubescence; color pale testaceous, more rarely slightly ferruginous, humeri always with dark spot, sides rarely infuscated. Pygidium elongate oval, oblique, moderately convex, coarsely punctured, clothed with whitish pubescence, near apex becoming dusky or variegated at base, and on each side near apex a smooth, impressed, elongate space. Body beneath pale testaceous, pectus and sides of abdomen dusky, punctulate and clothed with whitish pubescence. Legs pale testaceous, extreme tips of tibiæ and terminal tarsal joint piceous. Length .08 inch; 2 mm.

The above description applies to the large majority of the specimens, in which the thorax and elytra are darker in color the pubescence is variegated. On the thorax the pubescence is in great part sparse but along the median line behind and a small space on each side of the lobe, the pubescence is more dense. On the elytra also the pubescence of the striæ is transversely interrupted at irregular intervals.

This species resembles a diminutive *B. prosopis*, Lec., but the latter has the strong tooth and two denticles well defined.

Occurs in the seed of the Screw-bean, *Strombocarpus pubescens*, in Arizona.

**B. aureolus**, n. sp.—Oblong oval, black, densely clothed with yellowish-white lustrous pubescence. Head black, densely punctured, scarcely pubescent. Antennæ black, not as long as head and thorax. Thorax similar to the preceding species, coarsely punctured and rugulose, densely pubescent. Scutellum oblong, clothed with paler pubescence. Elytra similar in form to the preceding species, piceous or nearly black, densely clothed with yellowish-white lustrous pubescence, surface striate, striæ punctured, intervals flat, densely rugoso-punctate. Pygidium oval, oblique, moderately convex, densely punctured, clothed with yellowish-white pubescence with pale median line widest at base. Body beneath black, densely punctulate, more sparsely clothed with a whitish pubescence. Legs entirely black. Length .08—.10 inch; 2—2.5 mm.

The tooth of the hind femur of this species is small but acute at tip, the denticle scarcely perceptible, distant from the tooth. Resembles the preceding species in form, but differs in the color and vestiture, and like it has its larger analogue in the following group.

Occurs in the desert region of California. The food plant is unknown.

**B. pauperulus**, Lec., Pacif. R. R. Report, App. i., p. 52.—Oblong oval, black, moderately shining, sparsely cinereo-pubescent. Head densely punctured, opaque. Antennæ longer than head and thorax, black, three basal joints piceous. Thorax nearly twice as wide at base as long, sides strongly arcuate in front, slightly sinuate near the hind angles, base slightly lobed at middle, lobe truncate, on each side nearly straight, surface coarsely punctured, intervals rugulose, sparsely cinereo-pubescent, inclining to brownish. Scutellum slightly

longer than wide, at middle longitudinally impressed, cinereo-pubescent. Elytra at base not wider than thorax, sides moderately arcuate, surface striate, striæ punctulate, intervals flat, densely punctulate and sparsely cinereo-pubescent. Pygidium oval, coarsely punctured and rugose, sparsely pubescent. Body beneath black, finely punctured, and clothed with finer pubescence than above. Legs black. Length .04—.06 inch; 1—1.5 mm.

In very well preserved specimens, which, however, are rarely seen, the pubescence of the elytra is not uniformly cinereous, the third interval has a short whitish line and two very indistinct interrupted bands of darker color cross the elytra, one near the base, the other behind the middle. This is one of the smallest species in our fauna.

The tooth of the hind femur is short but acute and the denticle very minute.

Not rare from San José to San Diego, California.

#### GROUP VII.

This group contains species in number nearly equalling all the other groups taken together. They are usually of elongate form. The hind femur has one moderately large tooth and always two denticles, the latter being usually distinct from the tooth itself, rarely arising from its vertical edge.

The following synoptic table will assist in the identification of our species, and as the characters made use of are drawn almost entirely from the colors of various parts of the body, care should be used to procure perfectly developed specimens, as the color (of the legs especially) is not otherwise to be depended upon.

- |   |                    |
|---|--------------------|
| Elytra rufo-testaceous frequently with black spots or patches.....        | 1                  |
| Elytra entirely black or dark piceous.....                                | 2                  |
| 1. Intervals of striæ with a row of sub-muricate punctures. ....          | 3                  |
| Intervals equally punctulate or punctulato-rugose.....                    | 4                  |
| 3. Scutellum rounded or transverse.....                                   | 5                  |
| Scutellum elongate.   |                    |
| Pygidium with short impressed line on each side near apex....             | <b>prosopis.</b>   |
| Pygidium without lines.....   | <b>floridae.</b>   |
| 5. Sides of elytra with large black spaces.....                           | <b>protractus.</b> |
| Elytra uniform in color, or humeri alone darker.                          |                    |
| Body beneath uniformly pale rufous in color.....                          | <b>inornatus.</b>  |
| Body beneath black, abdomen rufous.....                                   | <b>pectoralis.</b> |
| 4. Elytra uniform in color, humeri rarely darker. Species moderate.       |                    |
|   | <b>uniformis.</b>  |
| Elytra with black spot at middle of side. Species small.....              | <b>bisignatus.</b> |
| 2. Black or piceous species.  |                    |
| Legs bicolored, anterior and middle usually rufous, hind legs black. .... | 6                  |
| Legs all black.....   | 7                  |

7. Scutellum round, densely clothed with white.....**alboscutellatus**.  
 Scutellum more or less elongate.....8
8. Elytral striæ wide, deep and coarsely punctured at base.....**perforatus**.  
 Elytral striæ moderate.....9
9. Vestiture of elytra uniform in disposition and color.....10  
 Vestiture variable in color.  
 Cinereo-pubescent, obscurely maculate; intervals finely punctulate.  
**pauperculus**.  
 Cinereo-pubescent, on the intervals interrupted; intervals with coarse punctures.....**distinguendus** ♂.
10. Elytra very sparsely pubescent.....**calvus**.  
 Elytra densely clothed, surface color nearly concealed.....**fraterculus**.
6. Thorax sparsely punctured, comparatively smooth; eyes flat.....**amicus**.  
 Thorax densely punctured; eyes convex.....11
11. Abdomen rufo- or piceo-testaceous.....**obsoletus**.  
 Abdomen and entire under surface black.....12
12. Pubescence of elytra unevenly disposed.....13  
 Pubescence evenly disposed, usually concealing the color of elytra .....15
13. Pubescence interrupted on the intervals by darker spaces.....14  
 Pubescence sparse forming sinuous designs.....**longistilus**.
14. Thorax roughly punctured; elytral intervals with coarse punctures.  
**distinguendus** ♀.  
 Thorax not roughly punctured; intervals punctulate.....**hibisci**.
15. Hind legs entirely black; scutellum broad with white pubescence.  
**schraukiæ**.  
 Hind legs bicolored; scutellum longer than wide.  
 Pubescence of elytra cinereous somewhat yellowish, unicolorated **aureolus**.  
 Pubescence ochreous, clouded.....**mixtus**.

**B. prosopis**, Lec., Proc. Acad., 1858, p. 77.—Oblong, ferruginous, sparsely cinereo-pubescent, elytra with patches of brown along the lateral margin. Head brownish testaceous, coarsely punctured, sparsely cinereo-pubescent. Eyes with golden lustre. Antennæ as long as head and thorax, feebly sub-seriate, pale rufous. Thorax trapezoidal, very nearly as long as wide at base, sides straight, base lobed at middle and on each side slightly sinuate; surface coarsely punctured, punctures distant, median line finely impressed, sparsely clothed with cinereous pubescence clouded with brownish and with a narrow patch of white pubescence extending half way along the median line. Scutellum twice as long as wide, median line distinct, cinereo-pubescent. Elytra at base not wider than the thorax, sides slightly arcuate and diverging toward apex; surface striate, striæ punctured, intervals flat, punctulate and with a few coarse punctures distantly placed; color brownish testaceous, with darker patches along the sides; vestiture cinereo-pubescent, interrupted with very narrow transverse lines of brownish. Pygidium slightly oblique, coarsely punctured, clothed with cinereous pubescence clouded with brown, and on each side near the apex a dark brown, impressed line. Body beneath pale rufous densely whitish pubescent. Legs pale testaceous. Length .16 inch; 4 mm.

The dark patches along the side of the elytra are of irregular size and are usually four in number, in addition to which a space clothed

with darker pubescence is frequently seen near the scutellum and a very small space behind the middle on the third interval.

Occurs in the desert regions of California and Arizona, bordering the Colorado and Gila Rivers.

**B. floridae**, n. sp.—Body oblong, brownish, sub-opaque, elytra with two transverse sinuous patches of cinereous pubescence. Head brownish, occiput nearly black, sparsely but coarsely punctured. Antennæ black, four basal joints rufous, gradually stouter to tip and as long as head and thorax. Thorax trapezoidal, broader at base than long, sides moderately arcuate, surface coarsely and roughly punctured, a narrow median line of cinereous pubescence and with similar vestiture sparsely placed at the sides. Scutellum quadrate sparsely clothed with whitish hairs. Elytra oblong, feebly convex, at base not broader than the thorax, humeri feebly prominent, surface striate, striæ punctured, intervals flat, punctulate and with a few distant coarser punctures; color brownish, subopaque, with cinereous pubescence arranged in two transverse cinereous bands composed of short lines along the intervals. Pygidium moderately convex, coarsely but sparsely punctured and sparsely cinereo-pubescent. Body beneath brown but paler than above, sparsely cinereo-pubescent. Legs pale rufous. Length .12 inch; 3 mm.

Very distinct from any species in our fauna by the characters given. The sinuous bands composed of short lines are of irregular form, the median band being more distinct and sending a process along the fifth and sixth intervals to the base; the hinder band is narrower, sub-apical and less conspicuous than the median. The intervening spaces are not pubescent.

From Florida.

**B. protractus**, n. sp.—Oblong, parallel, pale rufo-testaceous, elytra with lateral black spaces; sparsely cinereo-pubescent. Head nearly black, moderately punctured. Antennæ pale rufous, feebly sub-serrate, longer than head and thorax. Thorax nearly as long as wide at base, sides moderately arcuate and slightly sinuate near the hind angles, base moderately lobed at middle, on each side slightly sinuate, sparsely cinereo-pubescent and with a small white spot on each side of the middle. Scutellum broader than long, with white pubescence. Elytra oblong, parallel, disc depressed; surface striate, striæ finely punctured, intervals flat, densely punctulate with a row of distantly placed coarse punctures; color brownish testaceous with large black spaces along the sides and a small round black spot on the centre of each elytron slightly behind the middle. Pygidium broadly oval, moderately convex, coarsely punctured, pale rufous, at middle with broad stripe of black constricted at middle, forming a figure 8, surface cinereo-pubescent at sides, median black space with a few whitish hairs along the middle and a more dense patch of pubescence on each side at the constriction. Body beneath brownish, paler at the sides, sparsely clothed with whitish pubescence. Legs pale rufous, outer side of hind femur somewhat darker. Terminal abdominal segment broadly concave. Length .16 inch; 4 mm.

In style of elytral marking this species somewhat resembles *B. pro-*

*sopis*, it is, however, more elongate and parallel, with a broader scutellum and the last abdominal segment broadly concave.

One specimen from the Peninsula of Lower California.

**B. inornatus**, n. sp.—Moderately robust, pale rufo-testaceous, sparsely but evenly clothed with cinereous pubescence. Head densely but not coarsely punctured. Antennæ as long as head and thorax, pale rufo-testaceous. Thorax nearly as long as wide at base, sides moderately arcuate and gradually converging from base to apex, base lobed at middle, lobe broadly rounded; surface coarsely and sparsely punctured, sparsely cinereo-pubescent. Scutellum short, small, transverse, sparsely clothed with whitish pubescence. Elytra at base not broader than thorax, conjointly nearly as wide as long, sides moderately arcuate, moderately striate, striæ punctured, intervals flat, densely punctulate and with a row of distant coarser punctures; color pale rufous, sparsely clothed with cinereous pubescence. Pygidium broadly oval, finely rugulose sparsely pubescent. Body beneath and legs pale rufous, sparsely cinereo-pubescent. Length .16 inch; 4 mm.

Easily known from all the species of the group by its broad scutellum, pale rufous color which is the same above and beneath, and the pubescence which does not conceal the surface color and yet is not dense.

One specimen, Middle States.

**B. pectoralis**, n. sp.—Oblong oval, moderately robust, rufous, meso- and metasterna black, elytra finely striate, clothed with fine whitish-yellow, silken pubescence. Head punctured, front sub-carinate, black, occiput rufous. Antennæ as long as head and thorax, subserrate, black, three basal joints rufous. Thorax trapezoidal, scarcely wider at base than long, sides nearly straight, base at middle feebly lobed; surface moderately convex, sparsely sub-muricately punctured and rugulose, and sparsely clothed with short silken pubescence of variable color from whitish to rufous. Scutellum small, round, pubescence whitish. Elytra at base not wider than thorax, surface finely striate, striæ finely punctured, intervals flat, densely punctulato-strigose and with an obsolete row of coarse punctures on the middle of each interval; color rufous, humeral region and epipleuræ darker, pubescence silken, yellowish, at apex inclining to brown. Pygidium equilateral, triangular, sparsely punctured and clothed with whitish pubescence. Body beneath black, abdomen rufous, sparsely clothed with whitish pubescence. Legs pale rufous, bases of hind femur and tibia piceous. Length .12 inch; 3 mm.

This is the only species in the present group in which the pubescence has a silken lustre. The elytra are also more finely striate than is usual in the genus.

One specimen, Texas.

**B. uniformis**, Lec. Proc. Acad., 1858, p. 77.—Elongate oval, more attenuate in front, rufous, clothed with cinereous yellow pubescence nearly concealing the surface color. Head rufous, punctulate, front obsoletely subcarinate. Antennæ scarcely as long as head and thorax, rufous. Thorax nearly as long as

wide at base, trapezoidal, sides nearly straight, slightly rounded near the front angles and with a fine impressed line parallel with the anterior margin not extending along the upper surface; base feebly lobed at middle, on each side slightly sinuate; surface sparsely punctured and clothed with yellowish-white pubescence with a fine line of white along the middle. Scutellum twice longer than wide, with distinct median line, pubescence white. Elytra at base not wider than the thorax, rather rapidly widening with sides arcuate, surface finely striate, striæ finely punctured and rather deeper at base; intervals flat, densely and finely punctulate, and densely clothed with pubescence of an uniform dirty white color. Pygidium broadly oval, sparsely punctured and clothed similarly to the elytra. Body beneath piceo-rufous, abdomen rufous, sparsely whitish pubescent. Legs pale rufous. Length .20 inch; 5 mm.

The humeri are frequently tipped with piceous. This species is one of the largest of the group, and is a reproduction on a large scale of *B. desertorum* of the preceding group.

Deserts of the Colorado and Gila Rivers of California and Arizona.

**B. bisignatus**, n. sp.—Oblong oval, black, elytra rufous with humeral and large lateral spot at middle, piceous. Head black, opaque, finely punctulate, front finely carinate. Antennæ as long as head and thorax, black, basal four joints rufous, subserrate. Thorax broader at base than long, sides strongly arcuate in front, at base feebly sinuate; base feebly lobed at middle; surface coarsely punctured and sparsely clothed with brownish hair varied with a whitish patch in front of scutellum, a small space on each side of middle and a very white small patch at the middle of each side. Scutellum subquadrate, median line distinct, clothed with whitish pubescence. Elytra at base not wider than the thorax, sides feebly arcuate, surface striate, striæ finely punctured, interspaces very finely punctulate; color rufous with humeral piceous spot extending, by a narrow band, along the margin to the middle and ending in a moderately large spot of acutely oval form which extends inwards to the fifth or fourth stria, inner apical angle also narrowly piceous; surface clothed with yellowish-white pubescence, paler along the third interval and behind the lateral spot; pale pubescence of third interval thrice interrupted by brownish spaces. Pygidium oval, sparsely punctulate, clothed with yellowish-white pubescence, paler at the sides. Body beneath black, moderately shining, sparsely punctulate, and pubescent with white. Legs pale rufous, middle and hind femora piceous at base. Length .08 inch; 2 mm.

Easily known from all other species of this group, with the elytra of varied color, by the entirely black under surface.

Three specimens from Kansas.

**B. alboscutellatus**, n. sp.—Oblong oval, moderately robust, black, sparsely cinereo-pubescent, pubescence of the intervals interrupted. Scutellum round, conspicuous, densely clothed with white pubescence. Head black, opaque, densely punctulate. Antennæ longer than head and thorax, subserrate, black, four basal joints somewhat paler. Thorax broader than long, sides feebly arcuate and scarcely narrower in front; base feebly lobed at middle, on each side sinuate; surface coarsely punctured, very sparsely whitish pubes-



cent and with a minute whitish spot on each side of middle. Scutellum round, conspicuous, densely clothed with white. Elytra slightly longer than wide, at base not wider than the thorax, sides moderately arcuate, black, feebly shining, surface striate, striæ punctured at bottom, intervals flat, minutely punctulate, sparsely clothed with whitish pubescence, forming short transversely interrupted lines, with a line on the third interval longer. Pygidium broadly oval, very convex, black, opaque, coarsely and sparsely punctured and finely rugulose, and very sparsely whitish pubescent. Body beneath black, more shining than above, sparsely whitish pubescent. Legs black, anterior and middle tibiæ piceous. Length .10 inch; 2.5 mm.

This species may be known at a glance by the round scutellum densely clothed with white pubescence forming a very conspicuous character when the specimen is examined under moderate power. The elytral ornamentation is not peculiar as our other species (*B. hibisci*) is similarly marked. The differences between the latter and the present species will be mentioned in detail under that head.

Occurs in Georgia, Louisiana and Missouri.

**B. perforatus**, n. sp.—Moderately robust, black, opaque, very sparsely clothed with short white pubescence. Head black, moderately elongate, coarsely punctured, opaque. Antennæ longer than head and thorax, black, basal joints piceous beneath, sub-serrate. Thorax trapezoidal, disc very convex, moderately shining, coarsely punctured, sparsely pubescent with silken white hairs, sides feebly arcuate and gradually convergent to apex; base slightly broader than the length of the thorax, at middle very feebly lobed. Scutellum longer than wide, median line distinctly impressed, clothed with silken white hairs. Elytra at base not wider than thorax, as wide at middle as long, sides moderately arcuate, surface deeply and rather broadly striate, striæ very coarsely punctured, especially at base, intervals flat, roughly punctured and with a row of coarse punctures along the middle; color black, moderately shining, very sparsely clothed with silvery pubescence. Pygidium elongate oval, oblique, coarsely punctured, sparsely pubescent. Body beneath black, moderately shining, more evidently pubescent than the upper surface. Legs entirely black. Length .10 inch.

The color of the surface is not at all concealed by the pubescence. The elytra are more deeply striate than is usual except in the earlier groups, and the punctures at base, especially, deeply impressed. The striæ at apex are also deep, while in most species the striæ gradually weaken toward the apex.

Two specimens are before me from the cabinet of Mr. Ulke, one from an unknown locality, the other from Arizona.

**B. pauperculus**, Lec. (see preceding group).—This species is introduced here to note a larger and more developed variety, in which the hind thighs have a well defined tooth and two denticles. The elytra are clothed with cinereous pubescence obscured by two bands of darker color crossing the elytra near the base and behind the middle, composed of spaces of irregular rounded

form. The form and sculpture agree in the larger and smaller specimens, which differ only in size. Length .10 inch; 2.5 mm.

Abundant everywhere in California, from San Francisco southward.

**B. distinguendus**, n. sp.—Form robust, color black, sparsely cinereo-pubescent, elytra with pubescence irregularly arranged. Head black, opaque, finely rugulose. Antennæ somewhat longer than the head and thorax, sub-serrate, black, second and third joints small moniliform ♂, third joint longer ♀. Thorax slightly broader at base than long, sides moderately arcuate and gradually narrowed to the front, base feebly lobed; surface coarsely punctured, at sides irrorate with patches of cinereous pubescence, median space scarcely pubescent. Scutellum longer than wide, median line not impressed, clothed with whitish pubescence. Elytra conjointly as broad as long, sides strongly arcuate, at base becoming rapidly broader than the thorax, surface striate; striæ at bottom punctured, intervals flat, finely rugulose and with a row of coarse punctures and clothed with cinereous pubescence broadly interrupted. Pygidium broadly oval, coarsely punctured, sparsely cinereo-pubescent. Body beneath black, sparsely pubescent. Legs all black ♂, anterior and middle pair rufous ♀. Length .10 inch; 2.5 mm.

This species has the robust form of some of the species of Group IV.

Two specimens, Georgia.

**B. calvus**, n. sp.—Oblong oval, black, very sparsely cinereo-pubescent. Head black, finely punctured, opaque. Antennæ as long as head and thorax, black, sub-serrate. Thorax slightly broader at base than long, sides moderately arcuate and gradually narrowed to apex, base feebly lobed at middle; surface finely ruguloso-punctate, and very sparsely pubescent. Scutellum small oval, with white pubescence. Elytra conjointly less wide than long, gradually becoming broader at base, sides moderately arcuate; surface shining, finely striate, striæ indistinctly punctured, intervals flat, finely punctulate, very sparsely cinereo-pubescent. Pygidium nearly equilateral, feebly convex, coarsely punctured, cinereo-pubescent. Body beneath and legs black, finely and sparsely pubescent. Length .08 inch; 2 mm.

More shining and less pubescent than any species of the group.

Massachusetts and Tennessee.

**B. fraterculus**, n. sp.—Black, moderately shining, form moderately robust, surface not densely clothed with cinereous pubescence, giving the surface a pruinose appearance. Head black, opaque, epistoma coarsely punctured, occiput and vertex with few fine punctures. Antennæ black, basal joint piceous, as long as head and thorax, feebly sub-serrate. Thorax one-fourth wider at base than long, sides feebly arcuate and gradually narrowed to apex; base moderately lobed at middle; disc moderately convex, coarsely and rather roughly punctured, very sparsely pubescent. Scutellum longer than wide, median line distinct. Elytra slightly longer than wide conjointly, sides moderately arcuate, surface striate, striæ punctured, intervals flat, densely punctulate, at base somewhat rougher, sparsely cinereo-pubescent. Pygidium oval, moderately convex, coarsely and sparsely punctured and pubescent. Body beneath black, moderately shining, sparsely pubescent. Legs black. Length .08—.12 inch; 2—3 mm.

Closely allied to some of the paler forms of *B. aurcolus*, but with entirely black legs. The pubescence is also less dense and finer, and the form more robust. In the table it appears closely allied to *B. calvus*, but the latter has scarcely any pubescence and the surface much more shining and the form more attenuate in front. The pubescence of *B. calvus* is not as might be inferred, lost by abrasion but very sparsely scattered over the entire surface and regularly disposed.

Specimens are abundant from the plains of Kansas, Nebraska and Colorado.

**B. amicus**, n. sp.—Oblong, black, moderately shining, densely clothed with silken white pubescence. Head oval, sparsely punctured, eyes scarcely more prominent than the adjacent surface. Antennæ as long as head and thorax, feebly sub-serrate, black, four basal joints pale rufous. Thorax one-half broader at base than long, sides moderately arcuate and gradually convergent to apex, basal lobe broadly rounded, disc moderately convex, a small shallow depression in front of basal lobe; surface comparatively smooth, moderately shining, very sparsely punctulate, intervals densely and very minutely punctulate, surface color almost entirely concealed by silken white pubescence. Scutellum small, broader than long, with white pubescence. Elytra conjointly at middle as broad as long, at base slightly broader than the thorax, sides moderately arcuate; disc flattened, striate, striæ punctured, intervals flat, punctulate, and with coarser punctures at base, clothed with silken white pubescence. Pygidium oblong oval, feebly convex, sparsely punctured and pubescent. Body beneath black, abdomen dark rufous, sparsely punctulate and pubescent. Femora rufous, at base piceous, tibiæ and tarsi piceous. Length .20—.22 inch; 5—5.5 mm.

One of our largest species, having the form of *B. prosopis* and *B. uniformis*. In mature specimens the color is dark piceous, frequently, however, specimens occur in which the thorax is partially rufous and also the middle of the base of each elytra. It has the most smoothly sculptured thorax of any species in our fauna.

Occurs in Texas and Arizona.

**B. obsoletus**, Say, Curc., p. 3; Am. Ent. Edit., Lec., p. i., p. 261; *obtectus*, Say, Curc., p. 1; Am. Ent., p. 259; *fabæ*, Riley, Annual Report, Ins., Missouri, 1871, p. 52; *varicornis*, Lec., mss.—Form moderately robust, color black or very dark piceous, moderately shining, clothed with dark cinereous pubescence, abdomen dull rufous. Head black, opaque, finely punctured, sparsely pubescent, front feebly sub-carinate. Antennæ slightly longer than head and thorax, sub-serrate, black, four basal and the terminal joint rufous. Thorax one-third wider at base than long, moderately convex, sides arcuate and gradually narrowed to tip, base lobed at middle, lobe slightly emarginate; surface coarsely and sparsely punctured, a slight longitudinal impression in front of scutellum, moderately clothed with coarse dark cinereous pubescence, paler along the median line. Scutellum subquadrate, emarginate at tip, median line distinct, cinereo-pubescent. Elytra conjointly not wider than long, disc feebly convex,

at base not wider than the thorax, sides feebly arcuate, surface striate, striae punctured, intervals flat, densely punctulate and clothed with coarse cinereous pubescence of darker color along the base and interrupted by transverse bands of darker color, third interval with a more conspicuous white line interrupted by the two obscure bands. Pygidium rufous, nearly vertical, broadly oval, coarsely punctured, sparsely cinereo-pubescent, pubescence more dense along the middle and at the sides. Body beneath black, sparsely pubescent, abdomen rufous. Legs rufous, under side of hind femur piceous. Length .10—.14 inch; 2.5—3.5 mm.

This is the most abundant species of *Bruchus* over the region east of the Rocky Mountains. The pubescence of the elytra is somewhat variable in color, the specimens from the Southern States exhibit the markings in their most perfect condition. In specimens not discolored by alcohol, the intervals are alternately of darker color but not conspicuously so, the third interval is decidedly more white than the rest and interrupted at basal fourth and apical third by a brownish spot. The pubescence on the other intervals is also similarly but less conspicuously interrupted and the pubescence then forms two irregular bands. The hind femur is conspicuously armed with a moderate tooth and two denticles.

The equivalency of Mr. Riley's specimens with *obsoletus* has been determined by typical specimens from that author, and it is to be regretted that another synonym, must thus be added, made in defiance of the views of those who have made Say's descriptions a close study. This error is all the more inexcusable as the *obsoletus*, by Mr. R.'s determination is Say's *transversus* (= *hibisci*, Oliv.).

The catalogue name *varicornis* has been added to the synonymy as specimens have been so labelled in many cabinets.

In the "Third Annual Report on the Noxious, Beneficial and other Insects of the State of Missouri," 1871, Mr. Riley gives an excellent account of the habits and ravages of this insect, pp. 52—56.

Abundant over a large extent of our country.

**B. hibisci**, Oliv., Ent. iv. 79, p. 21, No. 28, pl. 3, fig. 28, a, b; Schönh. Cure. i., p. 101. *Transversus*, Say, Cure. p. 3; Am. Ent. Edit. Lec. Vol. 1, p. 261. Robust, broadly oval, black, moderately shining, sparsely cinereo-pubescent, interrupted on the elytral interspaces. Head black, sparsely punctured and pubescent. Antennæ as long as head and thorax, pale rufous, joints 4—9 often slightly darker. Thorax twice broader at base than long, sides strongly arcuate and rapidly converging in front, base moderately lobed at middle; surface moderately shining, sparsely punctured and pubescent. Scutellum at tip bifid, median line distinct, clothed with whitish pubescence. Elytra as broad conjointly as long, sides moderately arcuate, disc convex, surface finely striate, striae punctured, intervals flat, punctulate, and with a few coarser punctures,

sparsely cinereo-pubescent, pubescence frequently and irregularly interrupted by transverse nude spaces at the positions of the coarse punctures. Pygidium black, broadly oval, sparsely punctured and pubescent. Body beneath black, moderately shining, sparsely pubescent. Anterior and middle legs rufous, hind legs nearly black, hind femur at tip rufous and armed beneath with a tooth and two denticles on its vertical face. Length .10 inch; 2.5 mm.

In form and the arrangement of the elytral pubescence this species resembles *alboscutellatus*, from which it may at a glance be distinguished by the form of the scutellum. The thorax is less punctured and more smooth than any species except *amicus*. Say, in his description, admits but one tooth to the hind femur, but on examination I find two denticles quite distinct on the vertical face of the tooth, a character unknown to any other of our species.

Occurs in Pennsylvania, Georgia and Tennessee.

**B. longistilus**, n. sp.—Oblong oval, black, shining, sparsely pubescent with white forming on the elytra an X-like design. Head black, sub-opaque, densely punctulate. Antennæ slightly longer than the head and thorax, gradually thicker to tip, black. Thorax wider at base than long, sides rather strongly arcuate and gradually narrowing to apex, base feebly lobed, surface moderately shining, densely punctured, very sparsely pubescent with white, more evident between the sides and middle. Scutellum small, sub-quadrate, sparsely pubescent with white. Elytra longer than wide, sides slightly arcuate and somewhat broader behind the middle, surface moderately shining, striate, striæ finely punctured, intervals flat, densely punctulate, very sparsely pubescent with white, third interval with a very evident white line, diverging from which on each elytron are two white lines, one directed forward, the other backward, forming together a design, X-like in form. Pygidium broadly oval, black, moderately convex, sparsely punctured and with very little pubescence. Body beneath black, moderately shining, with sparse pubescence at the sides. Anterior and middle tibiæ pale rufous, their femora rufous and piceous at base, hind femur piceous tipped with rufous, hind tibiæ rufous, short, terminal style very long and slender, tarsi of all the legs piceous. Length .08 inch; 2 mm.

One of our smallest, yet a very distinct species. The hind tibiæ, are shorter and rather stouter than usual, and the spur more than half the length of the tibia.

Two specimens, District of Columbia and Tennessee. Ulke.

**B. Schrankiæ**, n. sp.—Oblong oval, black, moderately shining, sparsely cinereo-pubescent. Head black, sub-opaque, finely punctured, sparsely pubescent. Antennæ. . . . two basal joints (alone remaining) rufous. Thorax one-third broader at base than long, sides moderately strongly arcuate and suddenly narrowing at apex, base moderately lobed at middle, surface coarsely punctured and cinereo-pubescent. Scutellum broader than long, with white pubescence. Elytra at base not wider than the thorax, sides continuing regularly the curve of the sides of the thorax, humeral protuberance obliterated;

surface finely striate, striæ feebly punctured, intervals flat, densely punctulate, and finely cinereo-pubescent. Pygidium broadly oval, feebly convex, coarsely punctured and sparsely pubescent. Body beneath black, sparsely pubescent. Anterior and middle tibiæ pale rufous, femora piceous, hind legs black. Length .10 inch; 2.5 mm.

Closely resembling *B. calvus*, but more regularly elongate oval in form, with smaller scutellum and with pale front legs.

One specimen from Mr. C. V. Riley, who obtained it from the *Schrankia uncinata*, near St. Louis, Missouri.

**B. aureolus** (see preceding group).—The form here noted in the synoptic table corresponds with the larger and more fully developed forms of *B. pauperculus*, also of the preceding group, and are merely noticed in this place because many of the specimens have two very distinct denticles and might be supposed to be undescribed, in the absence of the smaller form.

Occurs in Owen's Valley on the flowers of *Astragalus*.

**B. mixtus**, n. sp.—Resembles the preceding in form and sculpture and differs as follows:—Thoracic pubescence ochreous, becoming cinereous at the sides and with a minute whitish spot on each side of the middle and median line whitish. Scutellum elongate oval, pubescence white. Elytra with ochreous pubescence slightly shaded with cinereous and with a short white line on the third interval. Legs pale rufous, hind femur at base and last two tarsal joints piceous. Length .08 inch; 2 mm.

Collected in Utah.

#### GROUP VIII.

The hind thighs in this group have a strong tooth, usually rather long and acute, and three denticles also longer than usual placed at a moderate distance from the tooth. We have in our fauna three species of which two have stout femora closely resembling those of *B. mimus*.

**B. musculus**. Say, *Cure.*, p. 3; *Am. Ent. Ed. Lec. i.*, p. 261.—Black moderately robust, clothed with cinereous hair. Head black, coarsely punctured, sparsely pubescent. Eyes very deeply divided. Antennæ longer than head and thorax, gradually thicker to tip, frequently entirely pale rufous, usually with joints 6--10 piceous, terminal joint always rufous. Thorax wider at base than long, sub-campanulate, rapidly narrowing from base to apex, base moderately lobed at middle, on each side slightly sinuate, coarsely and densely punctured and sparsely pubescent. Scutellum sub-quadrate with whitish pubescence. Elytra sub-quadrate, disc flattened, rather deeply striate, striæ punctured, intervals flat, densely punctulate, cinereo-pubescent, the third interval behind the middle with a more evident whitish line. Pygidium triangular, coarsely punctured, sparsely cinereo-pubescent, more distinct along the middle. Body beneath black, finely punctured and sparsely pubescent. Legs testaceous, middle femur to middle, and hind femur and tibiæ entirely piceous. Length .08--10 inch; 2--2.5 mm.

Resembles *B. mimus* in form, but abundantly distinct by the char-

acters above given. In well preserved specimens the pubescence of the thorax is more evident along the middle and at the sides.

Occurs in Georgia.

**B. placidus**, n. sp.—Moderately robust, ferruginous, sparsely clothed with pale yellowish hair. Head coarsely punctured, vertex moderately convex, scarcely punctured. Antennæ pale rufous, slightly longer than head and thorax. Thorax at base one-third wider than long, sides arcuate in front, slightly sinuate near the base; base moderately lobed at middle, on each side slightly sinuate; surface coarsely punctured, and sparsely pubescent with intermixed cinereous and yellowish hairs. Scutellum broader than long with whitish pubescence. Elytra slightly longer than wide, disc feebly convex, sides moderately arcuate, surface finely striate, striæ scarcely punctured, intervals flat, densely punctulate and sparsely clothed with slightly yellowish pubescence. Pygidium broadly oval, moderately convex, coarsely punctured and sparsely pubescent. Body beneath ferruginous, sparsely cinereo-pubescent. Legs rufotestaceous, hind femora stout with one tooth and three denticles. Length .12 inch; 3 mm.

Entirely distinct by the pale ferruginous color. The elytra are not of uniform color in all specimens as indistinct patches of somewhat darker color are seen. The eyes are much less deeply emarginate than the preceding species and the form less quadrate.

Arizona and Texas.

**B. exiguus**, n. sp.—Oblong oval, black, elytra in great part rufous, clothed with cinereous pubescence. Head black, opaque, densely punctured. Antennæ black, four basal joints testaceous, as long as head and thorax. Thorax one-third wider at base than long, sides moderately arcuate anteriorly, front of base feebly sinuate; base at middle moderately lobed on each side slightly sinuate, surface black, coarsely punctured, very sparsely cinereo-pubescent, with four small spots more densely pubescent, one on each side of the median lobe and one on each of middle. Scutellum small, oval, sparsely cinereo-pubescent. Elytra oblong oval, gradually broader to apex, surface finely striate, striæ indistinctly punctured, intervals flat, densely punctulate, irregularly clothed with cinereous pubescence; color rufous, sides narrowly piceous. Pygidium broadly oval, coarsely punctured, moderately convex, rufous sparsely cinereo-pubescent. Legs pale rufous. Length .08 inch; 2 mm.

A minute species recalling *B. bisignatus* of the preceding group.

Two specimens, Kansas.

#### GROUP IX.

This group contains only small species characterized by the almost total obliteration of the denticles of the hind femur. The denticles, however, are always seen, but reduced to merely small tubercles. The hind femur is moderately dilated, or the species might have been included in Group IV., where, however, the male antennæ are always (in our fauna) pectinate. Two species occur in our fauna.

**B. seminulum**, n. sp.—Oblong oval, black, clothed with pale cinereous pubescence. Head black, opaque, finely punctulate. Antennæ not as long as head and thorax, black, basal joints piceous. Thorax wider at base than long, sides very feebly arcuate and gradually narrowing to apex; base feebly lobed at middle, coarsely punctured, sparsely pubescent. Scutellum small, oval, cinereo-pubescent. Elytra oblong, gradually wider to apex, moderately striate, striæ punctured, intervals flat, finely punctulate, with a row of distant coarse punctures on each, and clothed sparsely with cinereous pubescence. Pygidium oblong oval, sparsely punctured, cinereo-pubescent. Body beneath and legs black, sparsely cinereo-pubescent. Length .06 inch; 1.5 mm.

One of the smallest species known to me. Resembles some of the diminutive forms of *B. pauperculus*, but is more elongate and clothed with coarse pubescence of an uniform cinereous color.

Occurs over a wide extent of country, specimens being known from Pennsylvania, Nebraska, Dakota and California.

**B. macrocerus**, n. sp.—Oblong oval, black, moderately shining, sparsely clothed with whitish pubescence. Head oval, black, opaque, densely punctulate. Antennæ one-fourth longer than the entire body, slender, feebly subserrate, black. Thorax slightly wider at base than long, sides feebly arcuate, base feebly lobed at middle, surface opaque, densely punctured, very sparsely pubescent with white. Elytra slightly wider at base than thorax, conjointly nearly as wide as long, sides feebly arcuate, surface striate, striæ punctured, intervals flat, finely rugosely punctured and very sparsely clothed with white pubescence, with a more evident short line on the third interval. Body beneath black, sparsely pubescent. Legs black. Length .08; 2 mm.

A very distinct and singular species, and may be known from any in our fauna by the extreme length of the antennæ.

District of Columbia and Tennessee. Ulke.

The following species are said to have been collected in California, but from the fact that many of the species described by Boheman had erroneous localities assigned them, it is probable that these too have been misplaced. They are probably from the west coast of South America.

**B. ramicornis**, Boh. Voy. Eugenie, Ins., p. 112.

**B. californicus**, Boh. l. c., p. 114.

**B. atomarius**, Boh. l. c., p. 114.